CHAPTER I

EXECUTIVE SUMMARY

AND THE BEAT GOES ON!

All signs continued to point upward for the aviation community in fiscal year (FY) 1997.[1] The commercial aviation industry recorded its fourth consecutive year of strong traffic growth, while the general aviation industry sustained its recovery by registering its third consecutive increase in aircraft shipments. To a large extent, growth in both domestic and international markets continue to be driven by the continued strong expansion in the U.S. and world economies, and declining yields.

The U.S. economy continued to expand at an above-trend pace during 1997, with as yet no sign of significant inflationary pressure. The current U.S. economic expansion, now well into its seventh year, is the third longest in post-war history. However, it is also one of the slowest, in terms of growth, on record. Real growth in gross domestic product ([GDP], as measured in chain weighted $1992) has averaged only 2.7 percent annually since the 1990-91 recession. This compares to growth of 5.1 and 3.6 percent during the two longest post-war expansion periods--1962-69 and 1983-90, respectively. Over the past 4 years, however, real GDP growth has averaged 2.9 percent annually--up 3.2 percent in 1994, 2.5 percent in 1995, 2.3 percent in 1996, and 3.6 percent in 1997.

Globally, economic gains have averaged only 2.6 percent a year over the past 4 years. However, world GDP grew by 2.8 percent in 1996 and it is estimated that world economic activity will increase by 3.0 percent in 1997.

The strong annual growth in world GDP over the last 4 years is due largely to the stronger growth in China (up 10.2 percent), the Pacific Basin (up 6.8 percent), Latin America (up 4.0 percent), North America (up 2.9 percent), and Western Europe (up 2.4 percent) offsetting weaker performances in Japan (up 1.6 percent) and the former Soviet Union (down 6.2 percent). Although the combined GDP of the developing Asian nations has averaged 7.8 percent growth over the past 4 years, the economies of a number of the nations, in particular Thailand and South Korea, recently experienced an economic and financial crisis that could spread throughout that region.

The continued expansion of both the U.S. and world economies has had a major impact on the demand for aviation services. Worldwide traffic demand (as measured in revenue

[1] All stated years for U.S. economic, traffic, and financial data are fiscal years; all stated years for international economic, traffic, and financial data are calendar years (CY), unless otherwise noted.

passenger miles [RPMs]) has experienced relatively strong growth over the past three-and-a-half years (reported traffic through June 1997).

The combined traffic of the U.S. majors (carriers with revenues exceeding $1 billion) and the carriers who make up the Association of European Airlines (AEA) and the Orient Airline Association (OAA) grew at an annual rate of nearly 8.5 percent during this 30-month period. The AEA member airlines' traffic increased at an average annual rate of 9.4 percent while the OAA carriers' traffic averaged nearly 10.6 percent annually.

The two Canadian flag airlines (Air Canada and Canadian) also experienced strong traffic gains during this period, with traffic growth averaging 9.2 percent annually. Traffic for the three Latin American airlines (Aeromexico, Transbrazil, and Varig) for which reported data is available, increased by 5.2 percent annually over the same period.

During the last 4 years, U.S. commercial airlines' traffic growth has averaged 5.5 percent annually, 4.1 percent in international markets and 6.1 percent in domestic markets. In the domestic markets, however, the regional/ commuter carriers continue to be, by far, the fastest growing sector of the U. S. commercial aviation industry. Since 1993, its RPMs have increased at an average annual rate of 9.6 percent.

The financial performance of U.S. and world commercial airlines has also shown remarkable improvement over the last 4 years. Based on data compiled by the International Civil Aviation Organization (ICAO), world air carriers (including U.S. airlines) reported cumulative operating losses of $3.8 billion and net losses of $15.9 billion during the 3-year period between 1990 and 1992. However, over the next 4 years, world airlines reported cumulative operating profits totaling $35 billion, $25 billion in the last two years alone. There was also a notable improvement in the carriers' net position in 1995 and 1996, with cumulative net profits totaling $9.5 billion. Although financial data for world air carriers in 1997 is, at best, sketchy, interim carrier financial results appear to be largely positive.

The financial performance of U.S. commercial airlines has, to some extent, mirrored that of its worldwide counterparts, although its financial losses were significantly deeper during the downturn, and its profits significantly greater during the upturn. Between 1990 and 1993, U.S. carriers' cumulative operating losses totaled nearly $5 billion, while its net losses totaled over $11 billion. However, over the last 4 years, the industry has reported cumulative operating profits of almost $21.7 billion while its net profits have totaled over $9.4 billion.

The euphoria created by the passage of the General Aviation Revitalization Act in 1994 continues to be a major force in revitalizing the general aviation industry. Its manufacturers have established new product lines and/or reopened old product lines, creating hundreds of new jobs. In addition, manufacturers are beginning to invest in research and development so as to ensure the future growth and viability of the industry. Its trade associations have also launched a number of industry-wide promotional programs, such as "GA Team 2000," whose goal is 100,000 annual student starts by the year 2000. The positive industry statistics over the past several years indicate that these programs are starting to have the desired effect.

While there are a number of positive signs that point toward a continuation of the current rebound in both the commercial and general aviation industries, there are also a number of uncertainties that could limit the growth of the U.S. and world economies and ultimately, the demand for aviation services.

Although business travel appears to have weathered the impact of corporate downsizing and/or automation of operations, a recent

American Express study indicated that business fares in the United States rose by nearly 40 percent during the last 2 years. These increases are likely to have a dampening effect on future business travel and corporate travel budgets. Should business fares continue to experience large increases over time, business may look more favorably at teleconferencing, facsimile mail, or other alternatives to air travel.

There are also a number of trends that could potentially impact discretionary and pleasure travel. Consumer installment credit continues to rise along with credit card delinquency rates and the numbers of personal bankruptcies. Despite lower interest rates in the 1990s, regular monthly payments on consumer debt now accounts for nearly 18 percent of disposable income. This equals the previous peak reached in 1989. As a consequence, both consumers and financial institutions have become more cautious about further increases in the amount of debt outstanding.

Another concern is the continuing stagnation of middle-class incomes and the growing inequality in income distribution. This erosion of middle-class purchasing power, in combination with the record levels of consumer debt, has the potential to significantly impede the growth of future personal air travel. These factors could lead to slowdowns in discretionary consumer spending, including travel expenditures, in 1998 and beyond.

Of more serious and lasting concern is the current financial crisis in Asia. The major fear is that this financial crisis could spread throughout the region, Latin America, and Eastern Europe. The overall breath, severity, and longevity of this crisis will determine the long-run impact on world economic growth and the growth of world air travel.

REVIEW OF 1997

COMMERCIAL AVIATION

In 1997, the large U.S. air carriers' system capacity (ASMs or available seat miles) increased by only 3.0 percent, while passenger demand (RPMs and enplanements) grew by 5.1 and 3.5 percent, respectively. As a result, system-wide load factors (including domestic and international services) increased from 68.8 percent in 1996 to 70.3 percent in 1997--an all-time high. In fact, this marks the fourth consecutive year in which the industry has established a new record for passenger load factors. During this period, ASMs and RPMs increased at average annual rates of 2.7 and 5.5 percent, respectively. This has resulted in a 7.4 point increase in the average system load factor, from 62.9 percent in 1993 to the current level of 70.3 percent.

Domestic capacity (50 states, San Juan, and the U.S. Virgin Islands) increased 3.0 percent in 1997, while RPMs and passenger enplanements grew by 5.3 and 3.4 percent, respectively. As a result of the significantly slower grow in capacity, domestic carriers also established a new all-time high load factor of 68.9 percent, eclipsing the previous high of 67.4 percent recorded in 1996.

Unlike previous years' growth, most of the increase during the past year was the result of considerably stronger growth among the majors. During 1997, the majors' traffic grew by 5.8 percent while the combined traffic of the nationals (carriers with operating revenues between $100 million and $1 billion) and regionals (carriers with operating revenues less than $100 million) declined by 1.0 percent. During this same period, the majors' capacity increased by 3.6 percent compared to a 3.4 percent decline in the combined capacity of the nationals and regionals.

This reversal in growth patterns is, in large part, the result of the Valujet accident in May 1996 and the financial problems experienced by several other smaller low-cost, low-fare startup carriers. During the past 18 months, four carriers (Air South, Rich, Sun Jet, and Viscount) have ceased flying and Western Pacific has entered Chapter 11 bankruptcy.

The smaller regionals/commuters traffic grew at about the same rate as the larger air carriers in 1997, with RPMs and passengers up 5.4 and 3.0 percent, respectively. Like their larger counterparts, the regionals/commuters also achieved an all-time high load factor in 1997 (53.1 percent), as ASMs grew by only 3.7 percent. One explanation for the relatively slow growth in passengers in 1997 stems from an attempt by the Department of Transportation's Office of Airline Information to enforce the correct reporting of passengers--originating instead of enplanements. Prior to fourth quarter 1996, many of the larger regionals/ commuters had been erroneously reporting passenger enplanements instead of originations. It is estimated that this may have reduced the 1997 passenger count (or overstated the 1996 passenger count) by as much as 2.0 percent.

In 1997, it is estimated that U.S. and foreign flag carriers combined transported a total of 104 million passengers between the United States and the rest of the world, an increase of 8.4 percent over 1996. This traffic volume was distributed among the three world travel markets as follows: 43.1 million (up 3.8 percent) to and from Atlantic markets; 36.1 million (up 7.6 percent) to and from Latin American market, and 24.8 million (up 8.6 percent) to and from Pacific/Far East destinations.

On the other hand, international enplanements on U.S. flag carriers alone grew by 4.1 percent in 1997, less than half the estimated growth rate in total international traffic to and from the United States. This slower growth relative to total international traffic occurred in two of the three world travel markets, the exception being the Atlantic markets where U. .S. carriers enplanements grew by 4.3 percent (versus 3.8 percent). U.S. air carrier passenger enplanements were up 5.0 percent in Latin American markets and 3.1 percent in Pacific/ Far East markets.

Strong domestic and international traffic growth, combined with a continuation of the industry's restructuring and cost cutting programs, resulted in all-time record profits in 1997--a $7.9 billion operating profit and a $4.3 billion net profit. This compares to operating and net profits of $6 billion and $2.7 billion, respectively, in 1996.

Despite the significant gains reported in both industry traffic and profits over the last several years, considerable disparity continues to exist among the individual U.S. carriers. In 1997, 12 of the 13 majors reported positive earnings, with operating profits totaling $7.8 billion and net profits totaling $4.9 billion. Operating results for the majors ranged from a profit of $1.5 billion (Delta) to a loss of $263 million (Trans World). Four carriers (Delta, American, United, and Northwest) accounted for nearly two-thirds of the group's total earnings. Despite the vastly improved financial results of most of the majors, there is increasing concern among some Wall Street analysts regarding the continued financial viability of at least one of the majors.

The financial results of many of the smaller nationals/regionals are also cause for concern. The combined operating profits of the 54 reporting nationals and regionals totaled only $59 million in 1997, with 24 carriers (45 percent) reporting losses ranging from just over $90 million to $1.1 million. Equally disturbing, however, are the continued losses reported by the so called "low cost, low-fare" or "new entrant" carriers. Excluding the financial results of Southwest Airlines (operating profit of $444 million), eight "low

cost, low-fare" carriers reported combined operating losses totaling $247 million in 1997.

The industry will need similar or higher profits over the next several years if the industry is to be able to finance the replacement and new aircraft needed to accommodate future growth and meet the federally mandated noise regulations in the year 2000.

New commercial aircraft orders totaled 1,181 in FY 1997, up 11.6 percent over a very strong year in 1996. In fact, the 1,155 new aircraft orders recorded in CY 1996 have only been exceeded by the 1,248 orders recorded in CY 1989. The large numbers of orders for new aircraft in both 1996 and 1997 reflect, to a great extent, the industry's vastly improved financial condition

New aircraft deliveries totaled 623 in FY 1997, a 36.2 percent increase over the same 1996 period. The relatively large increase in new aircraft deliveries in 1997 is due, in large part, to the industry's dismal financial performance during the early 1990s, a period during which there were relatively few orders for new aircraft. As such, new aircraft deliveries slowed considerably during the 1995-96 period.

The demand for narrowbody aircraft continues to outpace the demand for widebody aircraft, accounting for 67.6 percent of total orders and 58.7 percent of total deliveries in FY 1997. However, these percentages do not reflect the increased demand for the new regional jets (under 60 seats) among the smaller regional/ commuter airlines. While the number of regional jets in world regional/commuter service now total less than 400 (103 in the U.S. fleet in 1997), orders for the 30 to 75 seat regional jets have totaled over 700 during the past several years.

GENERAL AVIATION

By almost any measure, 1997 was a very good year for general aviation. Unit shipments of general aviation aircraft are heading towards a third consecutive year of increase. General aviation manufacturers shipped a total of 1,077 aircraft in 1995, 1,130 in 1996, and 954 during the first 9 months of 1997. The number of units shipped in 1997 represents an increase of 30.7 percent over the same 1996 period. Of greater importance, however, is the fact that the renewed interest shown in piston powered aircraft over the past several years (shipments up 15.4 and 4.2 percent, respectively, in 1995 and 1996), continued to gain in strength in 1997. Piston aircraft shipments totaled 561 during the first 9 months of 1997, up 46.9 percent over the same period in 1996. During this same period, the industry shipped a total of 236 turbojets (up 46.9 percent) and 157 turboprops (down 20.3 percent).

Billings for general aviation aircraft totaled $3.1 billion in 1996, an all-time high. Billings during the first 9 months of 1997 have already exceeded the entire 1996 figure, totaling almost $3.2 billion. The large increase in billings relative to shipments reflects, to a large extent, increased shipments of the generally higher unit-priced turbojet aircraft

In addition, export billings and aircraft shipments have also shown tremendous growth in 1997, up 102 and 29 percent, respectively, during the first three quarters of the year.

Based on the results of the 1996 General Aviation and Air Taxi Activity Survey, the active general aviation aircraft fleet and hour flown increased for a second consecutive year, up 2.5 and 1.7 percent, respectively. According to the 1996 survey, the active general aviation fleet totaled 187,312 and flew an estimated 26.1 million hours.

General aviation activity counts were up at both FAA and contract towers as well as at en route

centers in 1997. Operations at combined FAA and contract towers were up 3.8 percent, with itinerant and local operations up 3.5 and 4.0 percent, respectively. This is the first recorded increase in general aviation activity at FAA/contract towered airports since 1990. Instrument operations at the combined towered airports have increased for 3 of the last 4 years (up 5.1 percent in 1997) while the number of aircraft handled at FAA en route centers increased for a sixth consecutive year (up 4.0 percent in 1997). Based upon these sustained positive trends in instrument operations and center activity, it would appear that the long awaited upturn in business/ corporate flying is here. Additionally, the increase in local operations (generally touch-and-go activity) at FAA/contract towered airports shows that there could also be a turnaround in instructional flying

Although the total number of active pilots declined (down 6,000) for the seventh consecutive year in 1997, the results were mixed. Two major pilot categories showed declines (pilots holding private and commercial certificates), while two showed increases (student and airline transport pilots). The number of instrument rated pilots declined for the fifth consecutive year. However, the decline (486) was the smallest during the 5-year period.

The number of airline transport pilots increased for 41st consecutive year. More important to the general aviation community, were the positive statistics with regard to student pilots. The number of active student pilots increased from 94,947 in 1996 to 96,101 in 1997, an increase of 1.2 percent. In addition, the FAA processed a total of 56,698 student pilot certificates (both new and renewals) during the first 11 months of 1997, a 4.5 percent increase over the number processed during the same 1996 time period. The FAA also processed 46,101 original student pilot certificates during the same 11-month period, 4.8 percent more than during the same 1996 period. Since student pilots are one of the key factors impacting the future direction of the general aviation industry, these statistics should be a source of good news for the general aviation industry.

Over the past several years, the industry has instituted a number of industry-wide programs, including "GA Team 2000," which are designed to attract new pilots to general aviation. The increased numbers in active student pilots and student pilot certificates processed in 1997 shows that these programs are beginning to have an effect.

FAA WORKLOAD

At the end of FY 1997 (September 30), there was a total of 450 towered airports, 290 FAA towers and 160 FAA contract towers. During 1997, a total of 32 FAA towers were converted to contract tower status. The number of FAA towers is down from 315 in 1996 and 402 in 1994. The number of FAA contract towers is up from 128 in 1996 and 32 in 1994

In 1997, FAA contract towers accounted for 16.2 percent of total combined activity at the 450 towers, up from only 3.0 percent in 1994. As in 1994, the majority of traffic activity at the contract towers is being performed by general aviation, 82.6 percent compared to 82.8 percent.

FAA and Contract Towers

Operations at FAA air traffic control towers totaled 53.1 million in 1997, a decline of 2.4 percent from 1996 activity levels. However, the decline reflects the conversion of 32 airports to contract tower status during the year.

The combined activity counts at FAA and contract towered airports totaled 63.4 million in 1997, up 2.4 percent over combined operation counts in 1996. The increase in the combined tower counts was largely due to a turnaround in general aviation activity (36.6 million), which increased 3.8 percent in 1997. Commercial air carrier operations (14.2 million) increased 2.3 percent in 1997, while commuter/air taxi operations (10.0 million) declined 1.4 percent. Military activity at the combined towers (2.5 million) also declined in 1997, down 1.6 percent.

Instrument operations at FAA towered airports (47.9 million) were up 2.8 percent in 1997, this despite the loss of 32 airports to contract tower status. Instrument operations at the combined FAA and contract towers (48.6 million) increased 3.0 percent in 1997. General aviation activity (19.0 million) was up 5.1 percent while commercial activity (26.3 million) grew by 3.1 percent. Military activity (3.3 million) declined 0.7 percent in 1997.

FAA En Route Centers

The number of Instrument Flight Rule (IFR) aircraft handled at FAA's en route air traffic control centers (41.4 million) increased 2.4 percent in 1997. The number of general aviation (8.2 million) and commercial aircraft (29.3 million) handled increased 4.0 and 2.5 percent, respectively. The number of military aircraft (3.9 million) handled declined 1.8 percent.

FAA Flight Service Stations

The number of traditional (non-automated) services provided at FAA Flight Service Stations (FSS) totaled 34.5 million in 1997, basically unchanged from 1996. This included a decline of 5.1 percent in the number of aircraft contacted (3.7 million). The number of pilot briefings (8.7 million) was unchanged in 1997. However, the number of flight plans originated, generally an indicator of general aviation activity, increased 1.5 percent in 1997, to 6.7 million.

The Direct User Access Terminal System (DUATS) provides an automated alternative to the FSS for obtaining pilot briefing information and filing flight plans. The number of DUATS transactions totaled 13.4 million (up 11.7 percent) in 1997. Combined FSS and DUATS services totaled 47.9 million in 1997, up 3.0 percent over combined 1996 transactions.

SUMMARY

Strong world and U.S. economic growth resulted in relatively strong demand for both domestic and international commercial air services during 1997. This strong traffic growth, in combination with a continuation of the industry's restructuring and cost-cutting measures, have resulted in significant improvements in the financial viability of both the U.S. and world commercial aviation industry. It has also resulted in record profits for most U.S. airlines.

The largely positive results for the general aviation sector appear to confirm that the long awaited upturn in the general aviation industry has arrived. Now into the fourth year since the passage of the General Aviation Revitalization Act, the general aviation industry appears to be revitalizing the market for general aviation products and services

ECONOMIC FORECASTS

The economic forecasts used by the FAA to project domestic aviation demand are provided by the Executive Office of the President, Office of Management and Budget (OMB). In addition to the OMB forecasts, the FAA also uses the U.S. macro economic projections of two commercial forecasting services--DRI/McGraw Hill (DRI) and The WEFA Group (WEFA). These alternative forecasts provide the FAA with a range of economic forecasts with which to gauge the risk associated with variations from the OMB projections. The FAA uses the world and individual country economic projections provided by WEFA to forecast the demand for international aviation services.

Gauging the strength, duration, and turning points of the U.S. and world economies can be a source of increasing perplexity for both the economic forecasting services and the economists who use these economic projections to forecast the demand for particular industries. This task has been made even more difficult this year by the current financial crisis in Asia. The breadth, severity, and length of the current crisis will go a long way toward determining whether the current world economic expansion continues for one or several more years, or whether the current crisis precipitates a global economic slowdown or recession. A more detailed discussion of the Asian financial crisis and its potential risk to the current aviation forecasts is presented in Chapter II of the hardbound copy of *FAA Aviation Forecasts Fiscal Years 1998-2009* (March 1998). The current financial crisis adds another element of uncertainty to the forecast process, thus increasing the difficulty of predicting the demand for domestic and international aviation services with any degree of confidence.

It should be noted, however, that in any given year there is likely to be variations around the long-term trend. None of the current economic models are sufficiently precise to predict interim business cycles. In addition, unanticipated developments, such as the 1990 Iraqi invasion of Kuwait and subsequent Gulf War and run-up in oil prices, cannot be predicted.

It should also be noted that, in addition to the economic forecasts prepared by OMB and the economic forecasting services, the FAA incorporates many of the relevant assumptions developed at the FAA/Transportation Research Board's (TRB) 10th Annual International Workshop (held September 15-17, 1997) into the FAA forecasting system. The assumptions and forecasts prepared by the three industry panels on general aviation--Light General Aviation, Business Aviation, and Vertical Flight--were used extensively in preparing this year's general aviation and helicopter forecasts.

The projected growth of aviation demand discussed in this and subsequent chapters of the forecast document is consistent with the national short- and long-term economic growth forecasts discussed in greater detail in Chapter II of the hardbound forecast document. Table I-1 summarizes the key U.S. and world economic assumptions used in developing the domestic and international aviation demand forecasts. Annual historical data and economic projections are presented in Tables 1 through 5.

United States Economy

Once again, there appears to be widespread agreement among most economic forecasters as to the general direction of the U.S. economy--sustained growth. However, there is some disagreement between the economic projections supplied by OMB and the alternative economic forecasts supplied by DRI and WEFA as to the magnitude of growth in individual years of the

forecast period. In general, OMB appears to be slightly less optimistic with respect to growth over the next 4-year period.

The OMB economic forecasts anticipate moderate growth throughout the forecast period. In the short-term, U.S. economic activity (as measured by real GDP) is projected to increase by 2.8 percent in 1998, then slow to 2.0 percent annual growth over the next 3 years. Growth is then expected to accelerate to 2.4 percent in 2002 and remain at this level throughout the remainder of the forecast period. GDP is forecast to increase at an average annual growth rate of 2.3 percent over the entire 12-year forecast period.

U.S. inflation (as measured by the consumer price index) is projected to remain in the low to moderate range throughout the 12-year forecast period, increasing at an average annual rate of 2.3 percent.

Oil prices (as measured by the oil and gas deflator) are expected to increase 3.3 percent in 1998, and then increase by an average annual rate of 2.1 percent over the remainder of the forecast period. Real fuel prices are projected to decline by 0.1 percent annually. No major disruptions in the price or availability of oil have been assumed during the 12 years of the forecast period.

World Economy

Worldwide economic growth is expected to exceed that of the United States, increasing at an annual rate of 3.4 percent over the 12-year forecast period. Economic growth is forecast to be greatest in the Far East/Pacific and Latin America, expanding at annual rates of 4.6 percent. These high rates of growth assume that these two regions are able to weather the current Asian financial crisis. Economic growth in Europe/Africa/Middle East countries is expected to average 2.8 percent over the forecast period.

Despite projections that show moderate to strong economic growth in Japan (up 1.9 percent in 1998), Brazil (up 3.8 percent), Eastern Europe (up 4.0 percent), and the former Soviet Union (up 2.5 percent), the financial crisis that began last summer in Thailand has the potential to spread throughout Asia and Latin America, and put severe pressure on Russian and Eastern European currencies. These events could slow the demand for aviation services in these travel areas.

AVIATION ACTIVITY FORECASTS

The large commercial air carrier traffic and activity forecasts are summarized in Table I-2. A detailed discussion of the forecasts and underlying assumptions can be found in Chapter III of the hardbound forecast document. Year-to-year historical data and forecasts can be found in Tables 6 through 18.

The regional/commuter and general aviation traffic and activity forecasts are summarized in Table I-3. Detailed discussions of the forecasts and underlying assumptions for the regionals/commuters and general aviation can be found in Chapters IV and V, respectively, in the hardbound forecast document. Year-to-year regional/commuter historical data and forecasts can be found in Tables 19 through 21; general aviation historical data and forecasts in Tables 22 through 26.

COMMERCIAL AVIATION

Air Carriers

Domestic air carrier RPMs and passenger enplanements are forecast to increase at annual rate of 4.1 and 3.5 percent, respectively, over the 12-year forecast period. The forecast assumes relatively strong growth in 1998 with RPMs growing by 4.5 percent and enplanements increasing by 3.5 percent. Demand is then expected to slow over the next three years, with RPMs and enplanements increasing at average annual rates of 3.8 and 3.2 percent, respectively. The relatively slower growth during this 3-year period largely reflects a slowing of the U.S. economy. However, traffic demand is also impacted by relatively large declines in real yield during the period, declining an average of 2.2 percent annually.

These relatively large declines in real yield are based on the assumption that air carriers will hold the line on fare increases to counteract the slowdown in passenger demand caused by the slowing of U.S. economic activity. In addition, fare activity during the 3-year period also reflects the competitive actions (both service and price) by the larger carriers to counter gains made by the low-cost, low-fare carriers.

Beginning in 2002, nominal yields are expected to increase 1.5 percent annually over the remainder of the forecast period. Yields are projected to increase at an annual rate of 1.2 percent over the entire 12-year forecast period. However, real passenger yields are expected to continue to decline throughout the forecast period, declining at an average annual rate of 1.1 percent over the 12-year period.

The decline in real yields reflects the expected continuation of strong competitive forces (both domestically and internationally) throughout the forecast period. Increased competition domestically will come from new second-tier carriers such as MetroJet, new entrant carriers, and from increased competition at slot controlled airports, such as Chicago O'Hare, New York LaGuardia, and Washington National, as the U.S. Department of Transportation creates additional slots for low-cost and/or new entrant carriers. Internationally, increased competition will come from expanded open skies agreements and global alliances. In addition, carriers can be expected to continue to hold the line on current costs and to actively seek additional cost-cutting measures. While increased competition exerts downward pressure on fare levels, the continued reduction in controllable costs allows the carriers to remain competitive without substantially weakening the bottom line.

Air carrier aircraft operations are forecast to increase at an annual rate of 2.3 percent during the 12-year forecast period. The slower growth in activity at FAA air traffic facilities relative to expected traffic increases (4.1 percent growth in domestic RPMs) reflects the efficiencies which result from the assumed increases in both the average aircraft size (up 2 seats annually) and the passenger trip length (up 5 miles annually). No gains are expected to be achieved from increased domestic passenger load factors. The current forecast assumes that load factors will remain fairly constant at the current historically high levels (69.0 percent) throughout the forecast period.

For a second consecutive year, this document contains forecasts of total passenger traffic (U.S. and foreign flag carriers) between the three world travel areas--Atlantic, Latin America (including Mexico and the Caribbean), and the Pacific/Far East--and the United States. These forecasts are based on historical passenger statistics obtained from the United States Immigration and Naturalization Services and on regional world historical data and economic projections obtained from WEFA.

Total passenger traffic between the United States and the rest of the world is expected to grow from 104 million in 1997 to 204.4 million in 2009, an average annual growth rate of 5.8 percent. Passenger traffic is expected to increase by 6.7 percent annually in Pacific markets, 6.5 percent in Latin American markets and by 4.6 percent in the Atlantic markets. A more detailed discussion of these forecasts, as well as a brief discussion of international forecasts prepared by several ICAO international forecasting groups, of which the FAA is a member, can be found in Chapter III of the hardbound forecast document.

U.S. carrier international air carrier RPMs and passenger enplanements are forecast to increase at average annual rates of 6.0 and 5.8 percent, respectively, over the 12-year forecast period. The stronger growth in international travel relative to domestic markets is, to a large extent, being driven by the strong demand projected in Pacific/Far East and Latin American markets--passenger enplanements up 6.5 and 6.2 percent, respectively. Passenger enplanements in the Atlantic markets are projected to grow by 4.4 percent annually.

The air carrier forecasts assume that commercial air carriers will continue to benefit from the moderate to strong economic growth expected to take place both within the United States and worldwide. It is also assumed that the cost containment efforts by both U.S. and foreign flag carriers will continue to result in improvements to the industry's overall financial performance. In addition, the retirement of large numbers of stage-2 aircraft during the 1998 to 2000 time period and, their replacement by more fuel efficient stage-3 aircraft, is expected to increase industry productivity. These productivity improvements should strengthen the industry's overall financial performance.

The current forecast assumes that U.S. air carriers will convert to an all stage-3 fleet (including retrofitted and re-engined stage-2 aircraft) by the year 2000. Present aircraft orders, options, and retrofit prospects support this assumption.

Regionals/Commuters

The regional/commuter industry consists of carriers that report on DOT Form-41 (10 carriers in 1997) and carriers that report on DOT Form 298-C. For reporting purposes, the distinction is based on aircraft size--carriers operating aircraft with 60 seats or more report all traffic, whether transported on larger or smaller aircraft, on DOT Form 41. All other carriers report on DOT Form 298-C.

In 1997, the regional/commuter airlines enplaned 61.9 million passengers, 11.1 percent of all passenger traffic in scheduled domestic air service. By the year 2009, these carriers are expected to carry 117 million passengers (5.5 percent annual growth) and to account for 13.4 percent of all domestic passenger enplanements.

Regional/commuter airlines RPMs are expected to increase by 7.6 percent annually over the forecast period, growing from 14.1 billion in 1997 to 34 billion in 2009. Most of the growth in regional/commuter traffic is expected to occur among the Form 41 carriers (RPMs and enplanements up 8.3 and 6.3 percent, respectively) or the larger Form 298-C carriers who operate the new regional jets.

The higher growth in RPMs relative to enplanements is the result of expected large increases in the average passenger trip length for regional/commuter carriers, increasing from 227.3 miles in 1997 to 290.5 miles in 2009. This increase in trip length is largely due to the continued integration of large numbers of high-speed turboprops and regional jets into the regional/commuter fleets. These aircraft, with ranges of up to 1,000 miles, are expected to

open up new opportunities for growth in non-traditional regional/commuter markets. The increased use of regional jets is also expected to lead to another round of route rationalization by the larger commercial air carriers, including markets in the 400 to 500 mile range and beyond. This phenomenon is expected to be one of the significant drivers of growth for the regional/commuter carriers during the early years of the forecast period.

The move to greater use of small regional jets and larger propeller-driven aircraft results in the average seating capacity of the regional fleet increasing from 31.2 seats in 1997 to 40 seats in 2009. Most of the growth in aircraft seat size occurs among the larger Form 41 carriers whose average aircraft seat size increases to 50 seats in 2009, up from 37.1 in 1997. Form 298-C carriers' average aircraft seat size increases from 28.1 seats in 1997 to 34.6 seats in 2009. The number of regional jets in the regional/ commuter fleet is expected to grow from 103 in 1997 to 769 in 2009.

GENERAL AVIATION

The general aviation active fleet is projected to total 212,960 in 2009, an increase of almost 24,000 aircraft (1.0 percent annual growth) over the 12-year forecast period. In 2009, piston powered aircraft continue to account for the majority of the fleet (80 percent), with turbine-powered fixed-wing aircraft (6.0 percent), rotorcraft (3.2 percent), and experimental aircraft (8.7 percent) accounting for most of the remainder of the general aviation fleet.

The current forecast assumes that the business use of general aviation aircraft will expand at a more rapid pace than personal use of general aviation aircraft. This is largely reflected in the changing character of the general aviation fleet mix. The more expensive and sophisticated turbine-powered part of the fixed wing fleet is expected to grow at a faster rate than are the piston aircraft categories. Turbine-powered fixed wing aircraft are projected to increase at an annual rate of 2.2 percent over the forecast period, totaling 12,710--6,482 turboprops and 6,228 turbojets--in 2009. Similarly, the turbine-powered rotorcraft fleet is expected to total 4,642 in 2009, an increase of 1.3 percent annually.

The general aviation piston fleet is projected to increase by just under 18,000 aircraft (1.0 percent annually) over the forecast period, totaling 170,265 aircraft in 2009. The number of single engine piston aircraft is expected to increase to 153,679 (1.0 percent annually) while the multi-engine piston aircraft fleet is projected to total 16,586 (0.4 percent annually) in 2009. The number of piston rotorcraft is expected decline by just under 300 aircraft over the forecast period, totaling 2,108 in 2009.

General aviation hours flown are projected to increase at an average annual rate of 1.4 percent over the 12-year forecast period, to 31.3 million hours in 2009. The larger increase in hours relative to aircraft reflects increased utilization of the general aviation fleet, i.e., greater hours flown per aircraft. In 2009, piston powered aircraft are projected to fly 23.3 million hours (up 1.3 percent annually); turbine-powered fixed-wing aircraft, 4.1 million hours (up 2.4 percent annually); and rotorcraft, 2.4 million hours (up 1.2 percent annually).

The number of active pilots are forecast to total 791,200 in 2009, an increase of almost 175,000 (2.1 percent annually) over the 12-year forecast period. Almost one third of this growth is expected to come from student pilots which are projected to increase by 54,000 (3.8 percent) and total 150,100 in 2009. Projected growth among other types of pilot certifications include: private pilot certificates, 2.5 percent annually to 332,900; airline transport pilots, 1.5 percent annually to 156,500; commercial pilot certificates, 0.6 percent annually to

134,300; and helicopter pilots, 0.6 percent annually to 7,300.

FAA WORKLOAD FORECASTS

The number of FAA towered airports is expected to decline from its current level of 290 (as of September 30, 1997) to 267 by September 30, 1998 and to remain at this level throughout the remainder of the forecast period. During this same period, the number of FAA contract towers are expected to grow from its current level of 160 (as of September 30) to 183 by September 30, 1998 and to remain at this level through 2009.

Since 1993, a total of 133 FAA towers have been converted to contract tower status. To overcome any reporting inconsistencies caused by the tower conversion program, the FAA has, since 1996, developed separate activity forecasts for both FAA and contract towered airports. Activity at FAA Air Route Traffic Control Centers and Flight Service Stations are not affected by the contract tower conversions.

Summary forecasts of aircraft activity at combined FAA and contract tower facilities can be found in Table I-4. Summary forecasts of activity at FAA facilities only, including FAA towers, en route centers, and flight service stations, can be found in Table I-5. More detailed forecasts and discussion of aircraft activity at FAA and contract facilities can be found in Tables 26 through 44.

FAA AND CONTRACT TOWERS

Activity at the combined FAA and contract towered airports is projected to grow from 63.4 million operations in 1997 to 75.4 million in 2009, an annual increase of 1.5 percent. The majority of this growth is expected to result from increased commercial aircraft activity. Between 1997 and 2009, air carrier activity is forecast to increase from 14.2 to 18.6 million operations (2.3 percent annually) while commuter/air taxi activity is expected to increase from 10.0 to 12.8 million operations (2.1 percent annually).

General aviation activity is projected to increase from 36.6 million operations in 1997 to 41.5 million operations in 2009, an annual increase of 1.0 percent. Military activity is expected to decline by approximately 1.0 percent annually over the next 2 years, then remain constant at approximately 2.5 million operations through the remainder of the forecast period.

The increased use of avionics by regional/commuter airlines and general aviation aircraft is expected to result in instrument operations increasing at faster rates than total tower operations. Combined instrument operations counts at FAA and contract towered airports increase from 48.6 million in 1997 to 59.1 million in 2009, an annual increase of 1.7 percent.

Commercial aircraft instrument operations (34 million) are forecast to increase at a significantly faster rate than are general aviation instrument operations (21.8 million operations), up 2.2 percent and 1.2 percent, respectively. Military instrument operations are forecast to decline for several years, then remain constant at the 1999 activity level (3.2 million) over the remainder of the forecast period

EN ROUTE CENTERS

The workload at FAA en route traffic control centers is forecast to increase at an average annual rate of 1.9 percent during the 12-year forecast period. In 2009, FAA en route centers are expected to handle 51.8.3 million IFR aircraft, up from the 41.4 million aircraft handled in 1997.

The number of commercial aircraft handled (38.1 million) is forecast to increase at an annual rate of 2.2 percent while the number of general aviation aircraft handled (9.7 million) increases at an annual rate of 1.4 percent. Military activity at en route centers is forecast to decline by 1.0 percent annually over the first 2 years of the forecast period (to 3.8 million aircraft), then remain constant at this level over the remaining years of the forecast period.

The higher growth rate at FAA en route centers, relative to activity at combined towered airports, reflects the fact that commercial activity accounts for a significantly larger percentage of center activity--70.8 versus 38.2 percent at towered airports in 1997. Therefore, the projected larger increases in commercial aircraft activity have a much greater impact on total center traffic during the forecast period.

FLIGHT SERVICE STATIONS

Total flight services originating at FAA flight service stations are forecast to decline from 34.5 million in 1997 to 32.8 million in 2019, an average rate of decline of 0.4 percent. Of the services provided by the FAA, only flight plans originated is projected to increase over the forecast period, growing from 6.7 million in 1997 to 7.1 million in 2009. Both pilot briefings and the number of aircraft contacted are forecast to decline over the next 12 years, down 0.9 and 1.7 percent annually.

The number of DUATS transactions are projected to grow at an average annual rate of 3.0 percent over the forecast period, from 13.4 million in 1997 to 19.2 million in 2009. Combined FSS and DUATS services are expected to total 52.0 million in 2009, an annual increase of 0.7 percent.

FORECAST SUMMARY

Highlights of the current FAA aviation forecasts for the 1998 to 2009 time period include:

- The U.S. economy is expected to grow at two-thirds the rate of worldwide economic activity (2.3 versus 3.4 percent annually), with most of world economic growth taking place in Latin America and the Pacific/Far East countries (4.6 percent annually).

- International passenger traffic is forecast to grow significantly faster than U.S. domestic traffic (5.8 versus 3.5 percent annually), with most of the international growth in passengers occurring in the Pacific/Far East markets (6.5 percent annually) and Latin American markets (6.2 percent annually).

- Regional/commuter passenger traffic will continue to grow at a faster rate than their larger domestic counterparts (5.5 versus 3.5 percent annually). Much of the growth during the early years of the forecast period results from a new round of route rationalization by the larger commercial carriers as a result of increased integration of regional jets into the regional/commuter fleets.

- The current optimism being exhibited throughout the general aviation community, combined with industry-wide promotional programs, is expected to result in moderate sustained increases in the active fleet (1.0 percent annually), hours flown (1.4 percent annually), and student pilots (3.8 percent annually).

- Aviation activity at FAA and contract facilities is expected to grow at a somewhat slower rate than that forecast for the general economy (1.5 to 1.9 percent versus 2.3 percent annually), with commercial

activity (up 2.2 percent annually) increasing at almost twice the rate of general aviation activity (1.0 to 1.4 percent annually).

Uncertainties which have the potential to limit the growth in the demand for U.S. and international aviation services include:

- The current financial crisis in several Southeast Asian countries could spread throughout Asia and other world regions and precipitate a worldwide economic slowdown or recession.

- The recent large increases in business fares could reduce future business travel and corporate travel budgets, and/or speed the introduction and/or acceptance of alternatives to air travel, i.e., teleconferencing.

- The continuing stagnation of middle class incomes and the growing inequality in income distribution, in combination with record high levels of consumer debt, could slow future consumer discretionary spending on air travel.

Nevertheless, air transportation is expected to continue to dominate all other transportation modes in both long distance domestic intercity travel and in international passenger markets throughout the foreseeable future.